

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

- 1 1. (Original) A method of forming a network from a plurality of nodes and a base station, the
2 method comprising the steps of:
 - 3 (a) identifying at least one node of the plurality of nodes to operate as a cluster-head;
 - 4 (b) forming a plurality of clusters from the plurality of nodes, each of the clusters having
5 at least one cluster-head;
 - 6 (c) transmitting data from at least one node in at least one of the plurality of clusters to
7 the cluster-head in that cluster;
 - 8 (d) transmitting data from at least one cluster-head to the base station; and
 - 9 (e) identifying a different one of the plurality of nodes to operate as a cluster-head.
- 1 2. (Currently Amended) The method of claim 1, wherein the step of forming a plurality of
2 clusters further comprises the steps of:
 - 3 advertising ~~an~~the availability of each of said plurality of cluster-heads; and
 - 4 establishing a communication path between each of said plurality of cluster-heads and at
5 least one of the plurality of nodes, not operating as a cluster-head, to form a cluster.
- 1 3. (Currently Amended) The method of claim 2 wherein the step of establishing a
2 communication path between the cluster-head and each of the at least one of the plurality of
3 nodes comprises the steps of:
 - 4 transmitting a status signal from each one of said plurality of cluster-heads;
 - 5 receiving at each of the plurality of nodes one or more of the status signals;
 - 6 comparing, at each of the plurality of nodes, not operating as a cluster-head, the signal
7 strengths of the received one or more status signals; and
 - 8 joining a particular one of the cluster-head's cluster as a result of the comparison.

1 4. (Currently Amended) The method of claim 3, wherein the step of joining a particular cluster
2 is based on a determination, by at least one of the plurality of nodes, of the cluster-head
3 transmitting the status signal having ~~at~~ the highest received signal strength.

1 5. (Original) The method of claim 2 further comprising the steps of:
2 generating at the cluster-head, a schedule having allotted slots for transmission;
3 transmitting data from at least one node to the cluster-head during the allotted slots;
4 receiving data in the cluster-head that are transmitted from at least one node; and
5 transmitting data from the cluster-head to the base station.

1 6. (Original) The method of claim 5, wherein the step of receiving data in the cluster-head
2 further comprises the step of reducing data transmission latency by using application-specific
3 data aggregation to reduce the amount of redundant data sent to the base station.

1 7. (Original) The method of claim 5, wherein the step of receiving data in the cluster-head
2 further comprises the step of increasing the signal to noise ratio of the data sent to the base
3 station by using application-specific data aggregation.

1 8. (Original) The method of claim 5, wherein the step of generating a schedule uses a time
2 division multiplexing protocol.

1 9. (Original) The method of claim 5, further comprising the step of beamforming the data
2 received from the plurality of nodes in the cluster.

1 10. (Original) The method of claim 1, wherein the step of identifying at least one of the
2 plurality of nodes to operate as a cluster-head further includes the step of randomly selecting one
3 of the plurality of nodes to be a cluster-head.

1 11. (Original) The method of claim 10, wherein the step of randomly selecting one of the
2 plurality of nodes to be a cluster-head is based on a probabilistic function of an amount of energy
3 remaining in each of the plurality of nodes.

1 12. (Currently Amended) The method of claim 1, wherein the step of forming a plurality of
2 clusters further comprises the steps of:

- 3 collecting data on ~~at~~the status of each of the plurality of nodes;
- 4 assigning each of the plurality of nodes to a particular one of a plurality of clusters.

1 13. (Original) A method for forming a network from a base station and a plurality of nodes, the
2 method comprising the steps of:

- 3 electing a cluster-head from the plurality of nodes;
- 4 establishing a communication path between first ones of the plurality of nodes and the
- 5 cluster-head to form a cluster;
- 6 establishing a first round of data transmission;
- 7 transmitting from the first ones of the plurality of nodes to the cluster-head during the
- 8 first data transmission round; and
- 9 transmitting data from the cluster-head to the base station during the first data
- 10 transmission round.

1 14. (Original) The method of claim 13 further comprising the steps of:

- 2 electing a plurality of cluster-heads corresponding to a first set of cluster-heads for use
- 3 during the first round of data transmission; and
- 4 establishing a communication path between each of the plurality of cluster-heads and at
- 5 least one node of the plurality of nodes to form a first plurality of clusters.

1 15. (Original) The method of claim 14 wherein the step of electing a plurality of cluster-heads
2 is performed by the base station.

1 16. (Currently Amended) The method of claim 15 wherein the base station elects cluster-heads
2 by minimizing ~~an~~the energy required during the first round of data transmission.

1 17. (Currently Amended) The method of claim 14 wherein:

2 during the first round of data transmission, each of the at least one node in each cluster
3 transmits data to the cluster-head of that cluster; and
4 ~~transmitting the data from each cluster-head~~ transmits data to the base station during the
5 first transmission round.

1 18. (Original) The method of claim 14 further comprising the steps of:
2 establishing a second round of data transmission;
3 determining whether each node of the plurality of nodes has operated as a cluster-head;
4 electing a second set of cluster-heads wherein each node in the second set of cluster-
5 heads has never before been a cluster-head; and
6 forming a second set of clusters about the second set of cluster-heads.

1 19. (Currently Amended) The method of claim 14 further comprising the steps of:
2 in each of ~~a~~the second set of clusters;
3 transmitting data from each node in the second set of clusters to the respective cluster
4 ~~heads~~nodes; and
5 transmitting data from each of the second set of cluster-heads to the base station.

1 20. (Original) The method of claim 14 further comprising the steps of :
2 establishing a second round of data transmission;
3 determining an amount of energy remaining in each node of the plurality of nodes;
4 electing a second set of cluster-heads, wherein the election is based on the amount of
5 energy remaining in each node of the plurality of nodes; and
6 forming a second set of clusters about the second set of cluster-heads.

1 21. (Original) A network comprising:
2 a base station; and
3 a plurality of nodes comprising:
4 a cluster-head selector processor; and

1 a cluster selector processor, each cluster comprised of a subset of said plurality of
2 nodes, and one of each of said subset of said plurality of nodes temporarily acting as a cluster-
3 head.

1 22. (Original) The network according to claim 21, wherein each of the plurality of nodes is in
2 electrical communication with a sensor.

1 23. (Original) The network according to claim 21, wherein each of said plurality of nodes
2 further comprises a sleep mode.

1 24. (Original) The network according to claim 21, wherein each of said plurality of nodes
2 further comprises an adjustable transmission energy level.

1 25. (Original) The network according to claim 21, wherein each of said plurality of nodes
2 further comprises a low energy mode, and a high energy mode.

1 26. (Currently Amended) The network according to claim 21, wherein each of said plurality of
2 nodes has a limited amount of remaining energy; and
3 wherein the cluster-head selector processor selects each of said plurality of nodes as a
4 cluster-head based on the limited amount of remaining energy in each of said plurality of nodes
5 and ~~at~~ the number of times each of said plurality of nodes has operated as a cluster head.

1 27. (Original) The network according to claim 21, wherein each of said plurality of nodes
2 further comprises a signal strength processor.

1 28. (Original) The network according to claim 27, wherein the cluster selector processor
2 determines the cluster selection in response to a signal from the signal strength processor.

1 29. (Original) The network according to claim 21, wherein the base station selects each of said
2 plurality of nodes to temporarily act as a cluster-head.

- 1 30. (Original) The network according to claim 21, wherein the base station determines which of
- 2 each of said plurality of nodes is included in each temporary cluster.